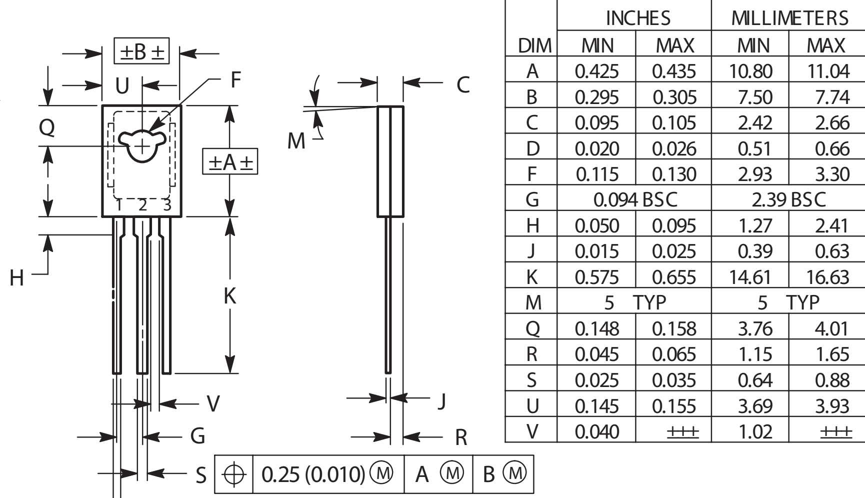


POWER TRANSISTOR E13003

SWITCHING REGULATOR APPLICATION

- High speed switching
- Suitable for switching regulator and motor control
- Case : TO-126 molded plastic body



DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.425	0.435	10.80	11.04
B	0.295	0.305	7.50	7.74
C	0.095	0.105	2.42	2.66
D	0.020	0.026	0.51	0.66
F	0.115	0.130	2.93	3.30
G	0.094 BSC		2.39 BSC	
H	0.050	0.095	1.27	2.41
J	0.015	0.025	0.39	0.63
K	0.575	0.655	14.61	16.63
M	5 TYP		5 TYP	
Q	0.148	0.158	3.76	4.01
R	0.045	0.065	1.15	1.65
S	0.025	0.035	0.64	0.88
U	0.145	0.155	3.69	3.93
V	0.040	±±±	1.02	±±±

NPN SILICON TRANSISTOR

FEATURES Tc=25°C unless otherwise specified

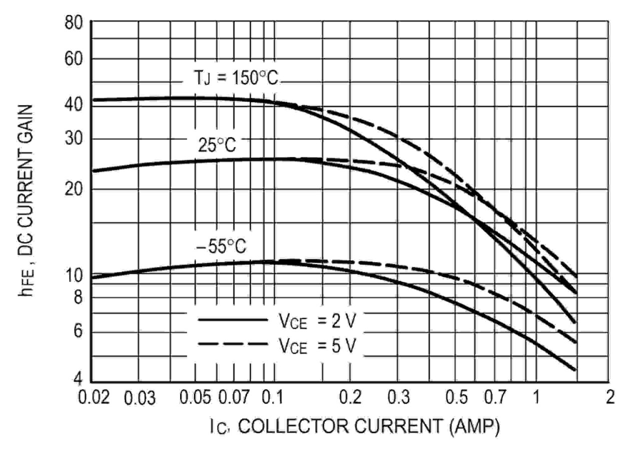
Parameter	Symbol	Value	UNIT
Collector dissipation	P_C	20	W
Collector current (DC)	I_C	1.5	A
Collector current (Pulse)	I_{CP}	3	A
Operating and storage junction temperature range	T_J, T_{STG}	-55 °C to +150 °C	°C

ELECTRICAL CHARACTERISTICS Tc=25°C unless otherwise specified

Parameter	Symbol	Test conditions	MIN	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C=1mA , I_E=0	700		V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C=10mA , I_B=0	400		V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E=1mA , I_C=0	9		V
Collector cut-off current	I_{CBO}	V_{CB}=700V , I_E=0		1	mA
Collector cut-off current	I_{CEO}	V_{CE}=400V , I_B=0		500	µA
Emitter cut-off current	I_{EBO}	V_{EB}=9V , I_C=0		1	mA
DC current gain	$h_{FE(1)}$	V_{CE}=2V , I_C=0.5mA	8	40	
	$h_{FE(2)}$	V_{CE}=10V , I_C=0.5mA	5		
Collector-emitter saturation voltage	V_{CEsat}	I_C=1A , I_B=250mA		1	V
Base-emitter saturation voltage	V_{BEsat}	I_C=1A , I_B=250mA		1.2	V
Base-emitter voltage	V_{BE}	I_E=2A		3	V
Transition frequency	f_T	V_{CE}=10V , I_C=100mA f=1MHz	5		MHz
Fall time	t_f	I_C=1A , I_{B1}=-I_{B2}=0.2mA , V_{CC}=100V		0.5	µS
Storage time	t_s			2.5	µS



RATINGS AND CHARACTERISTIC CURVES E13003



DC Current Gain

TJ = 25°C

IC = 0.1 A

0.3 A

0.5 A

1 A

1.5 A

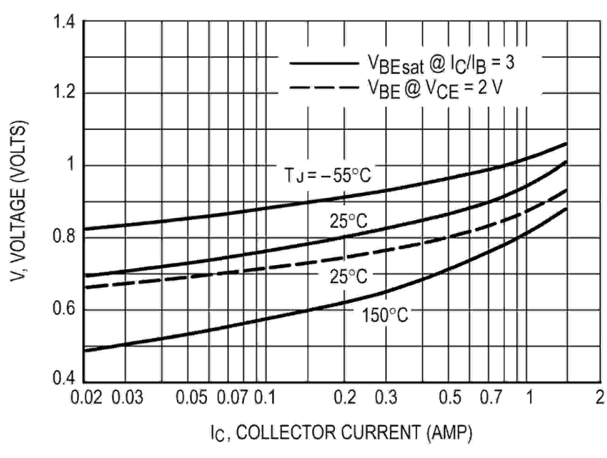
VCE, COLLECTOR–EMITTER VOLTAGE (VOLTS)

2 1.6 1.2 0.8 0.4 0

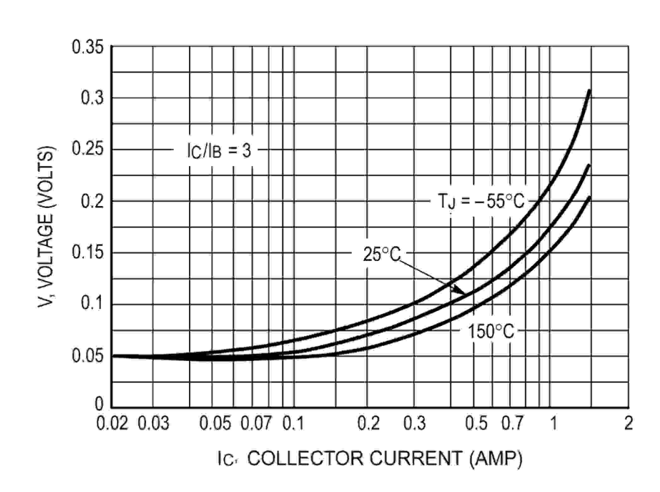
0.002 0.005 0.01 0.02 0.05 0.1 0.2 0.5 1 2

IB, BASE CURRENT (AMP)

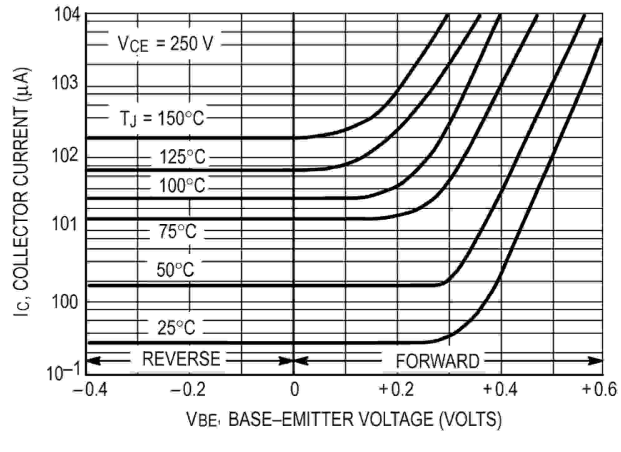
Collector Saturation Region



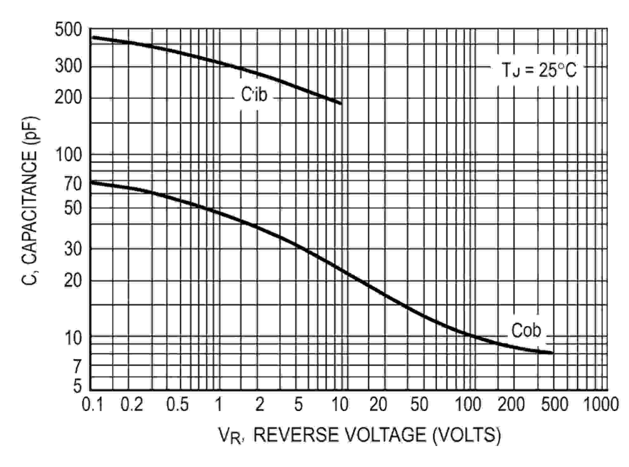
Base–Emitter Voltage



Collector–Emitter Saturation Region



Collector Cutoff Region



Capacitance